Listing of Claims:

1. (previously amended) An X-ray source comprising:

- an electron source for the emission of electrons,
- a target for the emission of characteristic, substantially monochromatic X-rays in response to the incidence of the electrons, said target comprising a metal foil of a thickness of less than 10μm and a base arrangement for carrying said metal foil, wherein the metal of said metal foil has a high atomic number allowing the generation of X-rays and the material substantially included in the base arrangement has a low atomic number not allowing the generation of X-rays, and
- an outcoupling means for outcoupling the X-rays on the side of the metal foil on which the electrons are incident and which is opposite to the side of the base arrangement.

2. (currently amended) The X-ray source as claimed in claim 1, wherein said base arrangement comprises a rotatable base plate of a material having an atomic number of less than 10~~, in particular in the range from 4 to 6~~.

3. (previously amended) The X-ray source as claimed in claim 1, wherein said base arrangement comprises a cooling circuit arranged to allow a coolant to flow along the side of said metal foil opposite to the side on which the electrons are incident.

4. (previously amended) The X-ray source as claimed in claim 3, wherein the coolant has a mean atomic number of less than 10.

5. (previously amended) The X-ray source as claimed in claim 3, wherein the coolant is water.

6. (previously amended) The X-ray source as claimed in claim 3, wherein said cooling circuit comprises a constriction in the area of the metal foil.

7. (currently amended) The X-ray source as claimed in claim 3, wherein said target further comprises a carrier of low atomic number material~~, in particular having a mean atomic number of less than 10,~~ supporting the metal foil on the side facing the coolant.

8. (currently amended) The X-ray source as claimed in claim 1, wherein the metal foil has a thickness of less than 5μm~~, preferably between 1 and 3μm~~.

9. (previously amended) The X-ray source as claimed in claim 1, wherein the metal of said metal foil has an atomic number between 40 and 80.

10. (currently amended) The X-ray source as claimed in claim 1, wherein said outcoupling means is adapted to outcouple X-rays at angles of an angular range from substantially 45° to 135°~~, in particular 70° to 110°~~, to the surface of the metal foil.

11. (currently amended) The X-ray source as claimed in claim 1, wherein said outcoupling means is adapted to outcouple X-rays in a direction substantially antiparallel to the direction of incidence of said electrons~~, in particular in a direction at an angle in the range from 150° to 210° to the direction of incidence of said electrons~~.

12. (previously amended) The X-ray source as claimed in claim 1, wherein said electrons are directed onto the surface of said metal foil at a substantially 90° angle.

13. (previously amended) The X-ray source as claimed in claim 1, wherein said electron source is located outside the X-ray beam to be outcoupled, said X-ray source further comprising means for directing the electron beam onto the metal foil.

14. (previously amended) A target for use in an X-ray source for the generation of characteristic, substantially monochromatic X-rays in response to the incidence of electrons, said target comprising a metal foil of a thickness of less than 10μm and a base arrangement for carrying said metal foil, wherein the metal of said metal foil has a high atomic number allowing the generation of X-rays and the material substantially included in the base arrangement has a low atomic number not allowing the generation of X-rays.

15. (currently amended) An X-ray source comprising:

- an electron source for the emission of electrons, and
- a target for the emission of substantially monochromatic X-rays in response to the incidence of the electrons, said target comprising a metal foil of a base arrangement, said metal foil allowing the generation of X-rays and the base member not allowing the generation of X-rays,

wherein said base arrangement comprises a cooling circuit to allow a coolant to flow along the side of said metal foil opposite to the side on which the electrons are incident.

16. cancelled

17. (currently amended) The x-ray source as claimed in claim ~~16~~ 15, wherein the coolant is water.

18. (currently amended) The x-ray source as claimed in claim ~~16~~ 15, wherein said cooling circuit comprises a constriction proximate the metal foil.

19. (new) The X-ray source as claimed in claim 3, wherein said target further comprises a carrier having a mean atomic number of less than 10 supporting the metal foil on the side facing the coolant.

20. (new) The X-ray source as claimed in claim 1, wherein said outcoupling means is adapted to outcouple X-rays in a direction at an angle in the range from 150° to 210° to the direction of incidence of said electrons.